

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION



KAREN D. MYERS, CPPB
DIRECTOR OF PROCUREMENT

INVITATION FOR BIDS: NO. 16-126

FOREST HILL ACTIVITY CENTER- ARENA SIDE HVAC

ADDENDUM NO. 1

January 27, 2016

Ladies and Gentlemen:

The purpose of this addendum is to provide clarification(s) to prospective bidders.

Question #1: Are the KE Fibertec fabric duct systems considered an approved equal for the DuctSox product that is proposed as part of this project?

Answer #1: KE Fibertec is not an approved equal due mostly to the warranty being negated if the fabric duct system is not taken down and washed annually. The DuctSox product is also a non-permeable system design and KE Fibertec is proposing a permeable fabric which will have different terminal velocities, air mixing and de-stratification properties. Only DuctSox ductwork or an approved equal for the DuctSox ductwork shall be bid for this project.

Clarifications:

1. Bidders must be pre-qualified in the area of E-5: Mechanical at the Procurement office in order to bid on this project. The deadline to submit paperwork in order to be pre-qualified for this bid is Wednesday, January 27th.
2. All bonds are required for this project.
3. There are twenty four (24) construction plan sheets with the details of the HVAC projects at this site; however, only 19 actually apply to the arena-side only. Any reference of work for the pool-side area is NOT part of this Contract.
4. Normal working hours shall be Monday thru Friday from 7:00am until 3:00pm for outdoor work and 8:00am until 4:00pm for indoor work. Daily clean-up will be required, especially inside; since the indoor turf field will be open to the public in the evenings. The earliest evening programs start at 4:00pm Monday- Thursday and 5:00pm on Fridays. No work inside will be approved on Saturdays. On several Thursdays only half the day will be available for work inside depending on the week.

MARYLAND'S NEW CENTER OF OPPORTUNITY

410.638.3550 | 410.879.2000 | TTY Maryland Relay 711 | www.harfordcountymd.gov
220 South Main Street, Bel Air, Maryland 21014

THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST

From March 3rd thru April 7th work may be performed between 8:00am and 12:00pm. From April 21st thru May 26th work may be performed between 12:00pm and 4:00pm.

5. The County has already applied for a building permit for this project; however, the awarded Contractor will be responsible for obtaining the other required permits, such as the electrical, plumbing and mechanical permits. These permits will also need to be finalized and approved before the end of the project. Note- any exposed gas lines will be required to be painted to meet code.
6. The four (4) existing heating units that will be taken down as part of this project will remain County property. The heaters shall not be removed until the County is not worried about heating the area anymore.
7. The plans (sheet #M0.1 note #14) say to drop the net over the arena area for the installation of the new HVAC equipment; however, the County will approve the cutting of the net, as long as the Contractor tries to re-use already cut areas as much as possible.
8. Attached is a revised plan sheet #M0.1 which removed the note in the bottom table that said "(ARENA AIR HANDLING UNIT INSTALLATION IS NOT PART OF THIS CONTRACT)", since only the arena air unit is to be installed with this bid.
9. The sub-contractor performing the electric work for this project shall work closely with BG&E for installing the new cabinet and upgrading the meter. The County will be paying BG&E directly for any costs related to BG&E.
10. Upon award of this Contract, the Contractor shall submit a sequence of construction for review and approval prior to beginning any work.
11. A lift can be used on the turf field but it will need to have plywood under it to prevent damaging the turf.

Should you have additional questions regarding this project, please do not hesitate to contact me at aehall@harfordcountymd.gov.

Sincerely,



Aaron E. Hall
Procurement Agent

cc: Angela L. Hoover, P&R

1. ALL EQUIPMENT, DUCTWORK AND PIPING INDICATED TO BE REMOVED SHALL BE COMPLETELY REMOVED INCLUSIVE OF ALL HANGERS, SUPPORTS, DAMPERS, VALVING, FITTINGS, ANCHORS, GUIDES, INSULATION, AND ANY OTHER ASSOCIATED APPURTENANCES.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLETELY DRAIN ALL FLUIDS FROM ALL PIPING SYSTEMS AND PROPERLY CONTAIN AND OR DISPOSE OF MATERIAL.
3. ALL RESULTING HOLES OR PENETRATIONS THRU EXISTING INTERIOR AND EXTERIOR WALLS AND ROOF SHALL BE COMPLETELY FILLED AND SEALED WITH FIRE-SAFE CAULKING.
4. ALL EXISTING ARCHITECTURAL ITEMS SHALL REMAIN, I.E. DOORS, WINDOWS, WALLS, ETC. ANY DAMAGE TO THESE ITEMS DURING THE ENTIRE CONSTRUCTION PERIOD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED OR REPLACED PRIOR TO THE END OF CONSTRUCTION.

- UNLESS OTHERWISE NOTED, ALL PIPING AND DUCTWORK IS OVERHEAD, TIGHT TO UNDERSIDE OF SLAB AND STRUCTURE, WITH SPACE FOR INSULATION, IF REQUIRED.
2. INSTALL PIPING AND DUCTWORK SO THAT ALL VALVES AND DAMPERS ARE ACCESSIBLE.
3. COORDINATE ALL MECHANICAL WORK WITH ELECTRICAL WORK, ETC., SHOWN ON OTHER DRAWINGS.
4. EXCEPT AS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (TOP OF SWITCH BOX) ABOVE FINISHED FLOOR ON THE HORIZONTAL CENTERLINE OF THE ROOM LIGHT SWITCH. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
5. CERTAIN ITEMS SUCH AS ACCESS DOORS, RISES AND DROPS IN DUCTWORK, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THOSE ITEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.
6. EQUIPMENT CONNECTION SIZES MAY DIFFER FROM INDICATED DUCT OR PIPE SIZES. PROVIDE APPROPRIATE TRANSITIONS WHERE REQUIRED.
7. THESE DRAWINGS ARE DIAGRAMMATIC AND ALL OFFSETS, FITTINGS, TRANSITIONS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. COORDINATE THE INSTALLATION OF ALL PIPING, DUCTWORK, EQUIPMENT AND OTHER WORK WITH ALL OTHER TRADES.
8. IT IS THE INTENT THAT ALL WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT MATERIAL OR WORK SPECIFICALLY NOT INDICATED ON THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK, SHALL BE PROVIDED.
9. ALL BRANCH DUCT RUN-OUTS TO AIR DEVICES SHALL BE PROVIDED WITH VOLUME DAMPERS.
10. MATERIAL, EQUIPMENT, INSTALLATION, AND PROCEDURES SHALL BE IN STRICT ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE LATEST CURRENT EDITION OF THE REFERENCED DOCUMENTATION.
 - A. REGULATIONS OF LOCAL AUTHORITIES HAVING JURISDICTION.
 - B. NFPA-NATIONAL FIRE PROTECTION ASSOCIATION.
 - C. SMACNA-SHEET METAL AND AIR CONDITIONING NATIONAL ASSOCIATION.
 - D. ASME-AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
 - E. ASTM-AMERICAN SOCIETY OF TESTING AND MATERIALS.
 - F. ASHRAE - AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, INC.
11. PROVIDE DIRT POCKET AT EACH DROP IN GAS PIPING.
12. CONTRACTOR TO FIELD VERIFY TOP OF DUCT ELEVATIONS PRIOR TO INSTALLATION OF FABRIC DUCT.
13. FABRIC DUCT IS TO CONTAIN HIGH THROW ORIFICES, BE CONSTRUCTED OF DURATEX MATERIAL, AND CONTAIN AN INTERNAL HOOP SYSTEM WITH GALVANIZED CABLE TO ASSIST WITH INSTALLATION. COLOR OF FABRIC DUCT IS TO BE SPECIFIED BY OWNER.
14. IN THE ARENA, NETS SHALL BE DROPPED, NOT CUT, WHILE INSTALLING DUCTWORK OVER ARENA FIELD.

HOT WATER HEATER SHALL BE
NATURAL GAS FIRED TANK TYPE.
RATED FOR 150 PSI WORKING PRESSURE.
TANK CAPACITY: 75 GALLONS
BURNER CAPACITY: 70,000 BTUH
RECOVERY RATE: 64 GPH @ 100°F RISE
120v/1 PH/60Hz, UNIT SHALL BE UL LISTED
AND SHALL MEET OR EXCEED ASHRAE/IES-90.1-1999
WITH A.G.A. RATED T & P VALVE.
DIRECT-VENT DESIGN WITH AN AUTOMATIC BLOWER-POWERED
TWO-PIPE AIR INTAKE AND EXHAUST SYSTEM.
AO SMITH MODEL BPD-75

| MECHANICAL LEGEND | | |
|-------------------|--------------|---|
| SYMBOL | ABBREV. | DEFINITION |
| | S.A. | SUPPLY AIR DUCT UP,DOWN |
| | R.A. | RETURN AIR DUCT UP,DOWN |
| | E.A. | EXHAUST AIR DUCT UP,DOWN |
| | O.A. | OUTSIDE AIR DUCT UP,DOWN |
| | | RECT. TO ROUND TRANSITION |
| | | FLEXIBLE CONNECTION (DUCTWORK) |
| | | FLEXIBLE DUCT |
| | VD | MANUAL VOLUME DAMPER |
| | FD | FIRE DAMPER |
| | MOD | MOTOR OPERATED DAMPER |
| | AMS | AIR MONITORING STATION |
| | SA | SOUND ATTENUATOR |
| | SD | DUCT SMOKE DETECTOR |
| | | ELBOW W/ TURNING VANES |
| | | RADIUS ELBOW |
| | FPTU | FAN POWERED VAV BOX W/ HEAT COIL |
| | SL | ACOUSTICAL SOUND LINING |
| | | DUCT TRANSITION |
| | | CHANGE IN ELEVATION RISE(R),DROP(D) |
| | | POWER ROOF VENTILATOR |
| | | GATE VALVE |
| | | GLOBE VALVE |
| | | BALL VALVE |
| | | BALANCING VALVE |
| | | MULTI-PURPOSE VALVE |
| | | CHECK VALVE |
| | | BUTTERFLY VALVE |
| | | 3-WAY MODULATING VALVE (ATC) |
| | | 2-WAY MODULATING VALVE (ATC) |
| | PRV | PRESSURE REDUCING VALVE |
| | | NEEDLE VALVE |
| | | PRESSURE RELIEF OR SAFETY VALVE |
| | HED | HOSE END DRAIN VALVE |
| | | STRAINER W/HOSE END DRAIN VALVE AND CAP |
| | | AUTOMATIC AIR VENT |
| | | FLOW METER FITTING |
| | | COMBINATION SHUT-OFF/BALANCING VALVE |
| | | UNION |
| | | FLANGE |
| | | CONCENTRIC REDUCER |
| | | ECCENTRIC REDUCER |
| | | FLEXIBLE CONNECTION (PIPING) |
| | | MANUAL AIR VENT |
| | | THERMOMETER |
| | | PRESSURE GAUGE W/NEEDLE VALVE |
| SYMBOL | ABBREV. | DEFINITION |
| | | TEMPERATURE SENSOR |
| | T'STAT | THERMOSTAT |
| | | FAN SWITCH |
| | | STATIC PRESSURE GAUGE |
| | D.P. | DIFFERENTIAL PRESSURE CONTROLLER |
| | D.P.T. | DIFFERENTIAL PRESSURE TRANSMITTER |
| | A.F.C | AUTOMATIC FLOW CONTROL VALVE |
| | FS | FLOW SWITCH |
| | S.P. | STATIC PRESSURE CONTROLLER |
| | | PIPE ALIGNMENT GUIDE |
| | X | PIPE ANCHOR |
| | | EXPANSION LOOP |
| | | UNIT HEATER |
| | | PIPE-TURN DOWN |
| | | PIPE-TURN UP |
| | | SOLENOID VALVE |
| | | END CAP |
| | | DIRECTION OF FLOW |
| | DD | DUCT SMOKE DETECTOR |
| | H.P.S. | HIGH PRESSURE STEAM |
| | L.P.S. | LOW PRESSURE STEAM |
| | SC | STEAM CONDENSATE |
| | H.S.(P) | HEATING SUPPLY (PRIMARY) |
| | H.R.(P) | HEATING RETURN (PRIMARY) |
| | H.S.(S) | HEATING SUPPLY (SECONDARY) |
| | H.R.(S) | HEATING RETURN (SECONDARY) |
| | CS | CONDENSER WATER SUPPLY |
| | CR | CONDENSER WATER RETURN |
| | HS | HEATING SUPPLY |
| | HR | HEATING RETURN |
| | CHS | CHILLED WATER SUPPLY |
| | CHR | CHILLED WATER RETURN |
| | CW | COLD WATER |
| | HW | DOMESTIC HOT WATER |
| | HWC | HOT WATER RECIRCULATING |
| | F | FIRE LINE |
| | SD | STORM DRAIN |
| | SAN | SANITARY |
| | V | VENT |
| | D | DRAIN LINE |
| | | RETURN AIR REGISTER W/ BOOT |
| | BTU | BRITISH THERMAL UNIT |
| | MBH | BTU PER HOUR (THOUSAND) |
| | SENS. | SENSIBLE |
| | BHP | BOILER HORSEPOWER |
| | WG | WATER GAUGE |
| | VEL | VELOCITY |
| | FPM | FEET PER MINUTE |
| | LF | LINEAR FOOT |
| | KW | KILOWATT |
| | MIN. | MINIMUM |
| | MAX. | MAXIMUM |
| | NC | NOISE CRITERIA |
| | DB | DECIBEL |
| | LBS. | POUNDS |
| | TEMP. | TEMPERATURE |
| | EXH. | EXHAUST |
| | SPLY. | SUPPLY |
| | TONS | TONS OF REFRIGERATION |
| SYMBOL | ABBREV. | DEFINITION |
| | SQ. | SQUARE |
| | WTR. | WATER |
| | OAT | OUTSIDE AIR TEMPERATURE |
| | STD. | STANDARD |
| | ΔT | TEMPERATURE DIFFERENCE |
| | ℅ | PERCENT |
| | EFF. | EFFICIENCY |
| | ELECT. CHAR. | ELECTRICAL CHARACTERISTICS |
| | CAP | CAPACITY |
| | SB | STAND-BY |
| | FT. H 2 O | FEET WATER GAUGE |
| | IN. H 2 O | INCHES WATER GAUGE |
| | ATC | AUTOMATIC TEMPERATURE CONTROL |
| | EX. | EXISTING |

| REVISIONS | | |
|-----------|------|-------------|
| NO. | DATE | DESCRIPTION |
| | | |
| | | |
| | | |
| | | |

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MECHANICAL LEGEND, GENERAL
NOTES & SCHEDULES
FOREST HILL REC CENTER
FOREST HILL, MARYLAND

M0.1

| UNIT NO. (PDH) | LOCATION | DESIGN DATA | | | SUPPLY AIR BLOWER | | | | | | EXHAUST AIR FAN | | | | PURGE FANS | | | | COMPRESSOR | | | | EVAPORATOR COIL | | | REHEAT | POOL HEATING | | | | AUXILIARY HEAT | | | | AIR-COOLED | | | ELECTRICAL DATA | | | | BASED ON SERESCO MODEL No. | |
|----------------------|----------|--------------------|------------|-----|-------------------|-----------------------|---------------|---------------|---------------------|----------------|-----------------|---------------|---------------|---------------------|-----------------------|---------------|---------------|---------------------|------------|--------------|-------------|--------------|-----------------|----------------------------|-------------------------------|-------------------------------|----------------------------|-------------------|-----------------------|---------------------------|----------------|------------------|------|-------------------|------------|------------------|---------------|-----------------|----------|------|-----|----------------------------------|--------|
| | | OUTDOOR AIR CFM | DB (°F) | %RH | CFM | E.S.P. (IN H2O) | No. MOTORS | MOTOR (HP) | MOTOR FLA (A) | MOTOR DRIVE | CFM | No. MOTORS | MOTOR (HP) | MOTOR FLA (A) | PURGE AIR (CFM) | No. MOTORS | MOTOR (HP) | MOTOR FLA (A) | TYPE | No. COMP. | REFRIGERANT | MOTOR RLA | MOTOR LRA | TOTAL CAPACITY (MBH) | SENSIBLE CAPACITY (MBH) | LATENT CAPACITY (LBS/H) | TOTAL HEAT REJECTION | CAPACITY (MBH) | FLOW RATE (GPM) | PRESSURE DROP (PSI) | CONN. (IN) | COIL LOCATION | TYPE | CAPACITY (MBH) | CONTROL | No. OF MOTORS | MOTOR (HP) | MOTOR FLA | V/ø/Hz | FLA | MCA | | MOP |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON GRADE | 1550 | 84 | 58 | 4500 | 1.20 | 2.0 | 2.5 | 5.6 | DIRECT | 1705 | 1.0 | 2.5 | 5.6 | 2795 | 1.0 | 5.1 | 10.6 | SCROLL | 1.0 | R410A | 48.1 | 245 | 156.4 | 97.2 | 69.3 | 195.5 | 126 | 20 | 6 | 1 | UNIT | GAS | 220 | MODULATED | 2 | 0.78 | 3 | 208/3/60 | 70.9 | 83 | 125 | NE-012 |

| UNIT NO. (ERV) | SERVICE | LOCATION | SUPPLY FAN | | | | | EXHAUST FAN | | | | | ENERGY RECOVERY WHEEL PERFORMANCE | | | | | | | | | | | | | | | | | | COOLING COIL | | | | | | GAS HEATER | | | | CONDENSER FAN | | COMBUSTION FAN | | ELECTRICAL CHARACTERISTICS | | | | MAX OPER. WEIGHT (LBS) | BASED ON AAON | | | | | | |
|-------------------|---------|----------|------------|---------------------|------|------|------------|-------------|---------------------|------|-----|------------|-----------------------------------|---------------------|------|---------------------|-------------|-----------------|----------|------------|----------------|----------------|------------|-----------------|------------|-----------------|------------|----------------|----------------|------------|-----------------|------------|---------|---------|----------|---------|------------|------------------|------------------|-------------------------|---------------|------------|------------------------|-------------------------|----------------------------|------|---------|------|---------------------------|---------------|----------|--------|-----|------|--------|--|
| | | | CFM | E.S.P. (IN W.G.) | RPM | BHP | MOTOR (HP) | CFM | E.S.P. (IN W.G.) | RPM | BHP | MOTOR (HP) | OUTSIDE AIR | | | | EXHAUST AIR | | MOTOR HP | SUMMER | | | | | | | | | | WINTER | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | CFM | FACE VELOCITY (FPM) | CFM | FACE VELOCITY (FPM) | HP | OUTSIDE DB (°F) | | WB DB (°F) | RETURN WB (°F) | SUPPLY DB (°F) | WB DB (°F) | EXHAUST DB (°F) | WB DB (°F) | OUTSIDE DB (°F) | WB DB (°F) | RETURN WB (°F) | SUPPLY DB (°F) | WB DB (°F) | EXHAUST DB (°F) | WB DB (°F) | DB (°F) | WB (°F) | LAT (°F) | WB (°F) | MIN. EER | SENS. CAP. (MBH) | TOTAL CAP. (MBH) | MAX FACE VELOCITY (FPM) | LAT DB (°F) | WB DB (°F) | TOTAL INPUT CAP. (MBH) | TOTAL OUTPUT CAP. (MBH) | FLA | HP | FLA | HP | | | MIN .EER | V/φ/Hz | MCA | MOP | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ARENA | ON GRADE | 11800 | 3.3 | 1760 | 6.97 | 7.5 (2) | 11800 | 1 | 1760 | 2.3 | 3.0 (2) | 3200 | 250 | 3200 | 250 | 1/6 (2) | 95.0 | 78 | 75 | 62 | 78.2 | 65.8 | 91.8 | 75.1 | 10 | 9 | 75 | 62 | 64.5 | 55 | 20.5 | 20.5 | 76 | 63.1 | 51 | 50.4 | 10 | 318.3 | 411.8 | 370.2 | 123 | 75.8 | 810 | 648 | 1080 | 3/4 (4) | 3210 | 1/4 (3) | 10 | 208/3/60 | 214 | 225 | 7421 | RN-040 | |

1. EXTERNAL STATIC PRESSURE (E.S.P.) EQUALS THE STATIC PRESSURE REQUIRED AT THE CONNECTIONS OF DUCT WORK TO THE ENERGY RECOVERY VENTILATOR.
2. INTERNAL PRESSURE DROP SHALL INCLUDE 1.0 INCHES STATIC PRESSURE FOR FILTER LOADING.
3. UNIT TO INCLUDE A FACTORY MOUNTED NON-FUSED DISCONNECT.
4. PROVIDE DUCT SMOKE DETECTORS IN BOTH SUPPLY AND RETURN DUCT.

5. UNIT SHALL HAVE A SINGLE POINT ELECTRICAL CONNECTION.

6. IN SUMMER CONDITIONS, SUPPLY AIR SHALL BE REHEATED TO 72°F. SUPPLY AIR TEMPERATURE SHALL BE 72°F FOR BOTH SUMMER AND WINTER CONDITIONS.

7. UNIT SHALL HAVE R-410A REFRIGERANT.

8. UNIT SHALL HAVE MODULATION CAPACITY COMPRESSORS FROM 10-100% AND INDEPENDENT REFRIGERATION CIRCUIT FOR EACH COMPRESSOR.